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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,532	02/27/2004	Yue Wu	030489	9469

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QUALCOMM, INC
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EXAMINER	
KINKEAD, ARNOLD M	
ART UNIT	**PAPER NUMBER**
2817	

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/789,532	WU, YUE	
	Examiner	Art Unit	
	Arnold M. Kinkead	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawing was received on 09-13-05. The drawing is accepted.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,5,6,7,9, 10, 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Nguyen(US 6,917,248 new cite)

The reference by Nguyen discloses a differential tunable VCO that is implemented in PLL systems. Figure 4 shows inductance(407),first and second varactor pairs(401,402) arranged with the inductance to generate output signals; a tuning voltage input(Vcon, 408) is shown, as well bias voltages(via diodes 405 from 2.5-0.9v) for each varactor pair. A

constant input current source is shown coupled to a pair of cross coupled transistors(110,111). Capacitors(406) are shown coupled between the inductor and respective varactor pairs(401,402).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3, 4,8, 11,12 , 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen as applied to claims rejected above, and further in view of Kwek et al(US 6,774,736) and Chang(US 6,885,275) and Kitamura et al(US 6,906,596 new cite).

The reference by Nguyen discloses a differential tunable VCO that is implemented in PLL systems. Figure 4 shows inductance(407),first and second varactor pairs(401,402) arranged with the inductance to generate output signals; a tuning voltage input(Vcon, 408) is shown, as well bias voltages(via diodes 405 from 2.5-0.9v) for each varactor pair. A constant input current source is shown coupled to a pair of cross coupled transistors(110,111). Capacitors(406) are shown coupled between the inductor and respective varactor pairs(401,402). Please note the general biasing, see

figures 5-7, that show how the frequency band is adjusted dependent on the biasing (Vbias-Vt)voltage which in turn allows for a particular capacitance value to be obtained(Cmax or Cmin).

The reference by Nguyen does not show conventional resistor elements on the tuning voltage inputs nor does it suggest a differential to single ended converter for the output. With regards the resistance on the input tuning voltage, the reference by Kwek et al discloses a tunable oscillator that is used in a PLL, see figure 1 for PLL with conventional divider(120), detector(105), LPF(110), and VCO(115) which are not highlighted in Nguyen; the VCO, see figure 2, includes inductances(225),first and second varactor pairs(240) arranged with the inductances to generate a signal(Vn+, Vn-); a tuning voltage input(Vcon) is shown, as well as bias voltage inputs(Vref) for each varactor. Note **the resistor 246B** that is relied upon for noise dampening, for example, see col. 4 last para.

The reference by Chang is being relied on to highlight the use of a differential to single ended output, see col 27, lines 5-10, noting that the choice for single ended output is conventional and depends on the input requirements of any downstream circuit circuits such as a divider for example, in the PLL loop.

Lastly, the reference by Nguyen does not show the use of MOSCAPs for the varactor elements with gate and drain/source connections, however, the reference to Kitamura, see figure 4A, shows MOSCAPs (C11-C42) that are biased to allow for particular band operation of the VCO.

In light of the above it would have been obvious for one of ordinary skill in the art to have recognized that the system of Nguyen would be enhanced by using a resistor on the control input for noise dampening as suggested by Kwek et al and also, a single ended output may be required depending on the input requirements of downstream elements as suggested by Chang. This allows for the differential structure VCO with a correct output signal as

required by the system designer. The use of MOSCAPs for the general varactor elements shown in Nguyen is conventional and as Kitamura shows allows for the proper band operation.

Response to Arguments

5. Applicant's arguments with respect to claims 1-13, and 16 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold M. Kinkead whose telephone number is 571-272-1763. The examiner can normally be reached on Mon-Fri, 8:30 am -5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner' s supervisor, Robert Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Arnold M Kinkead
Primary Examiner
Art Unit 2817